ARAPAHOE GLACIER IN 1905

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On August 30, 1904, H. F. Watts and the writer, for the purpose of ascertaining the rate of movement of Arapahoe Glacier, placed upon the ice ten zinc tablets, tying them accurately to bench marks on the granite walls and terminal moraine by triangulation and direct observation. No. 1 was placed 300 feet from the northeast edge of the ice; No. 1 to No. 2, 89 feet; No. 2 to No. 3, 51.7 feet; No. 3 to No. 4, 58.6 feet; No. 4 to No. 5, 65.4 feet; No. 5 to No. 6, 82.8 feet; No. 6 to No. 7, 84.4 feet; No. 7 to No. 8, 73.8 feet; No. 8 to No. 9, 97.2 feet; No. 9 to No. 10, 114.4 feet. On August 30, 1905, we again visited the place and made accurate measurements, ascertaining that No. 1 had moved 11.15 feet; No. 2, 11.9 feet; No. 3, 13 feet; No. 4, 15.9 feet; No. 5, 16.75 feet; No. 6, 18.5 feet; No. 7, 20.6 feet; No. 8, 20.45 feet; No. 9, 21.7 feet; No. 10, 27.7 feet.

We have found each year, since the original survey in 1902, unmistakable evidence of shrinkage all along the lateral margins near where they curve into the terminal moraine, and along the terminus, particularly where the effects of erosion by surface drainage is greatest; but all this time the center of the ice-tongue has shown no shrinkage, either horizontally or vertically. Along the northeast margin the ice has shrunk away from the moraine about four feet since last year, all observations being made at the same time each year.

The snow-line on the ice, which had moved forward a long way during 1903 and 1904, has suddenly receded this year so far that the ice is bare nearly to the Bergschrund, as in 1902. A detailed examination of the summary of weather records of the three nearest United States Weather Bureau stations throws no light upon the cause of this sudden change. Comparison of photographs taken with the same lens at the same time of the year in 1904 and 1905 shows but little change in the extent of the snowbanks of the region, some having decreased in size, a few increased, but mostly stationary or slightly smaller.